

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A pattern forming method comprising:

forming a liquid-repellent thin film on an insulating surface, the liquid-repellent thin film being repellent to a liquid composition;

horizontally moving a first nozzle and a second nozzle, which are integrated, to a ~~first~~ selected portion of the liquid-repellent thin film with a spacing between the integrated first nozzle and second nozzle, and the thin film;

irradiating the ~~first~~ selected portion of the liquid-repellent thin film with plasma from the first nozzle to selectively provide affinity for liquid after the step of horizontally moving the integrated first nozzle and second nozzle; and

~~forming a first pattern by applying a drop of a liquid composition to the first selected portion~~
irradiated with plasma from the second nozzle by drop discharging method, after irradiating the first selected portion with plasma[[:]],

wherein a predetermined pattern is formed by repeating said steps of moving, irradiating, and applying.

~~horizontally moving the integrated first nozzle and second nozzle to a second selected portion of the film with a spacing between the integrated first nozzle and second nozzle, and the film, after forming the first pattern;~~

~~irradiating the second selected portion of the film with plasma from the first nozzle after the step of horizontally moving the integrated first nozzle and second nozzle; and~~

~~forming a second pattern by applying a drop of the liquid composition to the second selected portion from the second nozzle after irradiating the second selected portion with plasma;~~

~~wherein a groove is formed in the first selected portion by irradiating the first selected portion with plasma.~~

2. (Currently amended) A pattern forming method comprising:

forming a thin film having affinity for a liquid on an insulating surface;

horizontally moving a first nozzle and a second nozzle, which are integrated, to a first selected portion of the thin film with a spacing between the integrated first nozzle and second nozzle, and the film;

selectively irradiating the first-selected portion of the thin film with plasma from the first nozzle to form a first groove or a first hole in the first-selected portion after the step of horizontally moving the integrated first nozzle and second nozzle;

forming a first pattern by drop discharging method in which ~~applying a drop of a liquid composition is dropped~~ to the first groove or the first hole in the first selected portion of the thin film from the second nozzle after irradiating the first selected portion with plasma;

horizontally moving the integrated first nozzle and second nozzle to a second selected portion of the thin film with a spacing between the integrated first nozzle and second nozzle, and the thin film, after forming the first pattern;

selectively irradiating the second selected portion of the thin film with plasma from the first nozzle to form a second groove or a second hole in a surface of the second selected portion after step of horizontally moving the integrated first nozzle and second nozzle; and

forming a second pattern by drop discharging method in which applying a drop of the liquid composition is dropped to the second groove or the second hole in the ~~first~~ second selected portion of the thin film from the second nozzle after irradiating the second selected portion with plasma, wherein the first pattern and the second pattern can be configured to join with each other or to separate each other.

3. (Previously Presented) A pattern forming method according to claim 1, wherein the liquid composition comprises at least one selected from the group consisting of a conductive material, a resist material, a polymer material and a light emitting material.

4. (Currently amended) A pattern forming method according to claim 1, wherein the liquid-repellent thin film is selected from the group consisting of a semiconductor film, a conductive film and a polymer film.

5. (Currently amended) A pattern forming method according to claim 2, wherein the thin film having affinity for a liquid is selected from the group consisting of a silicon oxide film, silicon nitride film, a silicon oxynitride film and a metal oxide film.

6. (Previously Presented) A pattern forming method according to claim 1, wherein the irradiation with the plasma is performed at a pressure in a range of 1.3×10^1 to 1.31×10^5 Pa.

7-15. (Canceled)

16. (Previously Presented) A pattern forming method according to claim 2, wherein the liquid composition comprises at least one selected from the group consisting of a conductive material, a resist material, a polymer material and a light emitting material.

17. (Previously Presented) A pattern forming method according to claim 2, wherein the plasma irradiation is performed at a pressure in a range of 1.3×10^1 to 1.31×10^5 Pa.

18-22. (Canceled)

23. (Currently amended) A pattern forming method comprising:

horizontally moving a first nozzle and a second nozzle, which are integrated, to a first selected portion of a surface with a spacing between the integrated first nozzle and second nozzle, and the surface;

irradiating the first selected portion of the surface with plasma of a gas from the first nozzle to selectively provide affinity for liquid after the step of horizontally moving the integrated first nozzle and second nozzle;

~~forming a first pattern having conductivity by applying a drop of a liquid composition having conductivity to the first selected portion~~ irradiated with plasma from the second nozzle by drop discharging method, after irradiating the first selected portion with plasma;

forming a first mask pattern of a resist over the first selected portion ~~pattern~~; and

~~forming a part of a first wiring by etching the first pattern having conductivity~~ in the selected

portion using the first mask pattern[[;]],

wherein a predetermined wiring pattern is formed by repeating said steps of moving, irradiating, applying, mask pattern forming, and etching.

~~horizontally moving the integrated first nozzle and second nozzle to a second selected portion of the surface with a spacing between the integrated first nozzle and second nozzle, and the surface, after forming the part of the first wiring;~~

~~irradiating the second selected portion of the surface with plasma of a gas from the first nozzle after the step of horizontally moving the integrated first nozzle and second nozzle;~~

~~forming a second pattern having conductivity by applying a drop of the liquid composition to the second selected portion from the second nozzle after irradiating the second selected portion with plasma;~~

~~forming a second mask pattern of a resist over the second pattern; and~~

~~forming a part of a second wiring by etching the second pattern using the second mask pattern;~~

~~wherein quantity of plasma of a gas to be irradiated is varied between a vicinity of a region at which the part of the first wiring is formed and the other region.~~

24. (Previously presented) A pattern forming method according to claim 23, wherein the gas is selected from the group consisting of He, Ne, Ar, Kr, Xe, oxygen, nitrogen and a combination thereof.

25. (Previously presented) A pattern forming method according to claim 23 wherein the mask

pattern is formed by selectively applying the resist to the conductive pattern through a nozzle.

26. (Currently amended) A pattern forming method comprising:

horizontally moving a first nozzle and a second nozzle, which are integrated, to a first selected portion of a surface with a spacing between the integrated first nozzle and second nozzle, and the surface;

selectively irradiating the first selected portion with plasma of a gas from the first nozzle to form a first groove in the first selected portion of the surface after the step of horizontally moving the integrated first nozzle and second nozzle;

forming a first pattern having conductivity by applying a liquid drop composition comprising a conductive material to the first groove from the second nozzle by drop discharging method, after irradiating the first selected portion with plasma;

forming a first mask pattern of a resist over the first groove pattern after performing the drop discharging method forming the first pattern; and

~~forming a part of a first wiring by etching the first pattern having the conductive material~~
using the first mask pattern,

wherein a predetermined wiring pattern is formed by repeating said steps of moving, irradiating, applying, mask pattern forming, and etching.

~~horizontally moving the integrated first nozzle and second nozzle to a second selected portion of the surface with a spacing between the integrated first nozzle and second nozzle, and the surface, after forming the part of the first wiring;~~

~~selectively irradiating the second selected portion with plasma of a gas from the first nozzle~~

~~to form a second groove in the first selected portion of the surface after the step of horizontally moving the integrated first nozzle and second nozzle;~~

~~forming a second pattern having conductivity by applying a liquid drop composition comprising a conductive material to the second groove from the second nozzle after irradiating the second selected portion with plasma;~~

~~forming a second mask pattern of a resist over the second conductive pattern after forming the second pattern; and~~

~~forming a part of a second wiring by etching the second pattern using the second mask pattern;~~

~~wherein quantity of plasma of a gas to be irradiated is varied between a vicinity of a region at which the part of the first wiring is formed and the other region.~~

27. (Previously Presented) A pattern forming method according to claim 26 wherein the gas is selected from hydrogen, CF₄, NF₃, SF₆, oxygen and a combination thereof.

28. (Previously Presented) A pattern forming method according to claim 26 wherein the mask pattern is formed by selectively applying the resist to the conductive pattern through a nozzle.

29. (Previously Presented) A pattern forming method according to claim 1, wherein the application of the liquid composition is performed at a pressure in a range of 1.3×10^1 to 1.31×10^5 Pa.

30. (Previously Presented) A pattern forming method according to claim 2, wherein the application of the liquid composition is performed at a pressure in a range of 1.3×10^1 to 1.31×10^5 Pa.